



THE TREVITHICK SOCIETY

KOWETHAS TREVITHICK
NEWSLETTER 154 DECEMBER 2011



The Coalbrookdale replica, Blists Hill, Ironbridge, by Roger Harris

CHAIRMAN'S ADDRESS

... worth twenty pressed men

This page of the newsletter has been habitually used to appeal for volunteers to join the administration of this Society. The numbers of our council members had been dwindling with little sign of replacement when, just like the proverbial omnibuses, five come along together. A great part of this good fortune is due to the splendid work of Richard Hocking and the staff at Cornwall Centre for Volunteers in Redruth.

You may have already come across Sheila Saunders, our excellent Membership Secretary. Pennie Hallows and her husband Keith were a hard act to follow but Sheila's ability and enthusiasm have already established her as a worthy successor.

Roger Mason has brought his talent and experience as a secretary to take over from George Wilson and Chris Coombes has assumed the important role as the Society's treasurer.

Two other appointments will herald a significant improvement in the Society's outlook on Cornwall's place in the world of Industrial Archaeology and steam power development. Mike Bacon will act as our ambassador by linking to similar organisations and Kenn Shearer will handle the vital role of Communications Officer.

With plans for all sorts of developments flying about, these are crucial days for the Society and we wholeheartedly welcome the generous offers of assistance made by these talented people.

Philip M Hosken

EDITORIAL

The Puffing Devil is put to bed for the winter and there is nothing new to report since the last newsletter. Its first public appearance in 2012 will be in April.

Colin French

Copy date for next newsletter: February 12th



Established 1935

LETTERS TO THE EDITOR

Dear Editor,

I am trying to complete my run of Trevithick Society Journals - I need Numbers 17 and 29. If anyone can help my phone number is (01822) 833461.

Many thanks

Rick Stewart

tamarmole@yahoo.co.uk

Dear Editor,

Further to my request for information regarding the stamp of 'BBH' on the gates of Padstow Parish Church, I wish to thank Isabel Tremain, Graham Thorne and Stuart Smith who replied with information. It has been established that 'BBH' is in fact the trade name of W Barrows and Sons, proprietors of the Bloomfield factory and Tipton Ironworks.

Stuart pointed me in the direction of a book entitled, *The Staffordshire Iron trade* by Samuel Griffiths, first published in 1873. In it, Griffiths states that the 'BBH' brand is taken after the names of the originators of the firm (Bradley, Barrows and Hall) and then goes on to say that the Bloomfield Works were erected a little later than 1826. They had 100 puddling furnaces and produced 1000 tonnes of finished iron per week.

BBH iron enjoyed world wide fame for its high quality, being preferred in Australia and other colonies before all others.

It therefore appears that the Padstow Church gates are 19th century and made of the finest materials available. The vicar and church wardens have now decided to have the second of the three sets of gates rebuilt to their former glory.

John Woodward



The first set of rebuilt gates
at Padstow Church.

VAPEUR EN FRANCE

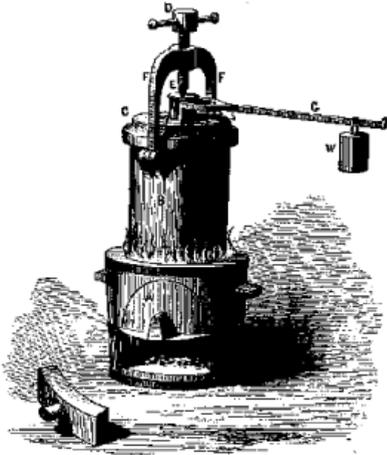
We have accepted the kind invitation to attend the 300th Anniversary of Denys Papin's death. This will be held at Circuit Vapeur Denis Papin at Chitenay, his native village just south of Le Mans on the 19th-21st July 2013.

As you may know, Papin, 1647-1712, is revered in France for his contribution to the evolution of the steam engine in a similar manner to this country's honour of James Watt, although with less misplaced fanatical devotion.

Papin's work included the 'bone digester' or pressure cooker and, following one or two mishaps, the safety valve. Being a Huguenot he left France for England a couple of times where he worked with Robert Boyle. He was admitted as a Fellow of the Royal Society in 1680. One of his significant contributions to the evolution of steam power was to use a piston within a cylinder and his work in high pressure steam. He is credited with being the first

person to power a boat by steam.

We intend to take the 'Puffing Devil' in the hands of John Woodward and his crew and will be guests of the kind organising committee. Other notable steam vehicles from Europe and the UK are expected to be there.



Papin's bone digester

Members, especially those who can speak any French, are warmly invited to plan their 2013 holidays in this Pays des Châteaux de Loire region of France and join us at what is intended to be a spectacular event. Details are obtainable at www.trevithick-society.com/chitenay and the contact in France is Georges Droulon g.dsteam@wanadoo.fr

P.M.H.

NEWCOMEN 300

The Newcomen Society intends to celebrate Thomas Newcomen's creation, in 1712, of his atmospheric beam engine; an advance in mine draining that was put into widespread use throughout the Cornish mining industry. It will be held in conjunction with the Dartmouth Town

Council on the 12th and 13th July 2012.

The lecture entitled 'Newcomen the Man' will be delivered on the Friday morning by Brian Corfield whose work on the history of the Hornblower family has been incorporated into the recent book *Oblivion of Trevithick*. This Society has been asked to supply details of Trevithick's work that illustrate the rise of steam power at the celebration.

Although James Watt improved the efficiency of the Newcomen engines, and replaced them throughout the Cornish mining industry, this was not the case in the rest of the country. While some 500 Watt engines were produced a further two thousand Newcomen engines were built in this country and abroad until both designs were replaced in the nineteenth century by Trevithick-type engines.

Members wishing to attend the event may also like to travel on the spectacular Dartmouth Steam Railway from Paignton. As soon as a detailed programme of events is produced by the Newcomen Society it will be displayed on this Society's website.

P.M.H.

FRESH VOLUNTEERS

The very existence of a Society like this depends entirely upon the service of volunteers to run it. In recent years the burden of administration of our diverse activities has fallen on the shoulders of fewer talented and willing, but overworked, volunteers.

For a variety of reasons people conclude their spell of volunteering. In the past year we have seen Stephen Thomas understandably lose some of his enthusiasm, as our accountant, 27 years after having been persuaded to take the post by his father, Milton.

George Wilson kindly stepped temporarily into the breach as our secretary back in 2007. He has done noble work for much longer than he ever intended while we sought his replacement.

Pennie Hallows, our membership secretary and a former nurse, was doing excellent work until her husband Keith, another member of this Society's council, was taken ill and she stepped down to look after him. In a moment we lost two important members of the council.

Otherwise, the remaining members hang grimly on and will wholeheartedly welcome their new colleagues to the next council meeting. The new council members are;

Sheila Saunders, Membership Secretary, tel. 01209 716541, email membership@trevithick-society.org.uk

Roger Mason, Secretary, tel. 01872 553488, email roger.g3tdm@virgin.net

Chris Coombes, Accountant, tel. 01872 865363, coombes417@btinternet.com

Michael (Mike) Bacon, Ambassador, tel. 01872 450183, mike@mdbac.fslife.co.uk

Kenn Shearer, Communications Officer, tel. 01209 832039, kernowkenn@gmail.com

Otherwise letters to the individuals should bear their name and be addressed to Trevithick Society, PO Box 62, Camborne TR14 7ZN.

Volunteering gives us the opportunity to meet people, to display the talents that have got us through life and employers no longer want, to get out a bit and to feel that what we do is being enjoyed by others. In addition, volunteering for this Society enables us to preserve Cornwall's industrial archaeology, proclaim the genius of the man who invented the high pressure steam engine and to leave a legacy for those who follow us.

This is being written just before Christmas and our thoughts are with Keith and Pennie at this time.

P.M.H.

A WORLD OF WELSH COPPER

Those members who are unaware might be interested to know that an exhibition, entitled *Swansea Copper*

Day, was held on the 5th March 2011 (St. Piran's Day) to commemorate the establishment and operation of the Welsh copper smelting industry.

The exhibition followed extensive research into the sources of copper from around the world and its transport to South Wales. Details of the event can be found on the following informative web pages:

http://www.welshcopper.org.uk/en/about_copperday.htm

and

http://www.welshcopper.org.uk/en/copper-guides_exhibition_development.htm.

The research highlighted Cornwall & West Devon as major producers of copper ore for this activity, mentioned the Cornish families (Vivian, Grenfell, Williams etc) who set up companies in the area and became involved in its development.

In addition to the information contained in the above web pages we are grateful to Dr Tehmina Goskar, MA AMA at Swansea University for a great deal of the information we have received and I will be pleased to pass this on to anyone interested in researching the Cornish end of this great commercial undertaking. Here, for instance, this is an extract from her communication,

Cornish ore and other mined products, including precipitates were the longest-sustained source of copper for the Welsh smelting industry, even into the early parts of the 20th century. However even in the hey days of Cornish/West Devon supply the careful blending of ores meant that one ingot or cake of Swansea copper, say, could contain metal derived from several mines from across the world: Spanish, Portuguese, Australian, Chilean, Cuban, etc. Really it is a very international product at that stage in its life.

From my own research I understand that most of the shipping involved in this trade was Cornish owned.

P.M.H.

LEVANT REPORT

Winter maintenance work has started on the engine and fresh coats of paint are being applied. There is a slight knock within the cylinder at the bottom of the stroke, and some months ago we lifted the cylinder head to inspect the top of the piston. About 20 thou of play was found in the cotter that secures the piston to the piston rod, and John Treloar who is our resident NT engineer, does not think that this will be a problem for the 2012 steaming season.

The new CFB boiler is performing very well although we are still experiencing the lack of steam volume that was evident with the old Fulton boiler. It appears to be a problem with the Spirax-Sarco pressure reduction valve and even after a complete refurbishing kit being fitted and another total strip-down, the fault is still there. It makes starting the engine difficult especially at the start of the day, but it does keep our drivers on their toes! Once the vacuum is

established the engine runs very well.

Planning consent to place the oil tank underground outside of the boiler house is proving difficult, so we are now thinking of installing a smaller tank inside Engine shaft where the Geevor Upcast fan is installed. Once that is done then refurbishment of the interior of Skip shaft can start to accommodate visitors during inclement weather.

The photo was taken a couple of years ago and shows three of our longest standing volunteers at that time They are Ken Brown - far right, Tom Barr - centre, and John Dickinson who has recently passed away and will be remembered by many Trevithick Society members.

Much appreciation is conveyed to Colin Short for officiating at the scattering of John Dickinson's ashes in the zawn at Levant on the 29th of October. The day went very well with about 35 people in attendance, and his widow Ann and family were pleased with the way things went.

Ron Flaxman



WHEAL BENNY VISIT WHERE DID THE FLATRODS GO?



On the 29th of October the East Cornwall branch had a fascinating field trip amongst along the wooded banks of the Tamar to explore the remains of Wheal Benny. The trip was expertly led by Stephen Docksey, whose impressive knowledge of the mine site and its history gave the group a great opportunity discover much about



Photographs by John Gander

this little known mine.

The possible route of the flat-rods evoked much discussion, head scratching, and poking around the undergrowth amongst the 14 members who attended. There appears to be discrepancies in field evidence and documentary evidence, did they enter the mine in the bottom adit (behind the water wheel) or the higher one? Can any member shed more light on this question?

The day was rounded off by some great food, and mugs of tea back at the Engine House Bistro. Many thanks to Stephen for his hard work in preparing the guided walk, and also to the Engine House Bistro for use of their car park.

John Manley

THE CARADON MINES AND MINERS RESEARCH PROJECT

The East Cornwall branch has just had the pleasure of taking delivery of new survey equipment provided by the Caradon Hill Area Heritage project and funded by the Heritage Lottery fund. This kit will play an important part in the Caradon Mines and Miners research project, an initiative lead jointly by the Trevithick Society and Plymouth Caving Group. The equipment will enable Society members in the East Cornwall area to conduct field surveys of both surface and underground remains of mines. Underground surveying of Wheal Victoria will re-commence in spring when the bats are clear of hibernation, so watch this space and our blog for news on survey training and events.

The equipment available

- Disto meter
- Dumpy level
- Tripod
- Survey staff
- Sighting compass

John Manley

FIELD TRIP TO WEST CORK

Would Society members be interested in a tour of the mine sites in West Cork, visiting some of the mines described in my book? There are some interesting mining remains around Schull and Crookhaven, and some spectacular engine houses in Allihies. We could even show some Bronze Age sites, for those of you interested in that period.

A possible date of the first week in September 2012 has been mentioned, staying in two centres, in Bantry and either in Allihies or nearby Castletownbere, which is a large fishing port. The best preserved Cornish man-engine house in the world is now in Allihies.



Travel to and from Cork would be possible by air or by ferry, depending on members' preference.

If you think you might be interested, could you email either Kingsley Rickard or me, just so we can gauge the level of interest at this stage.

Diane Hodnett.

Email: dianehodnett@eircom.net

HOLMAN HOOTER



The latest addition to the Society collection is of historical interest. It is a works hooter from the former Holman Bros No. 3 Works which was situated next to Camborne Railway Station.

It has been given to the Society by Chris Williams, joint owner of Saxton Drilling and Pnuo-Plant. These two companies were started by his late father, Sid, and for many years the businesses traded across the road from the No. 3 Works in the old GWR truck maintenance yard.



Sid rescued the hooter from a scrap bin over 40 years ago and on a number of occasions used it to sound a warning on some blasting jobs. By all accounts it makes quite a bit of a racket!

It was made by Jenkins Bros of Canada. If any member can date it or has any information on the company it would be appreciated.

John Woodward

KING EDWARD MINE

Now, in the depths of winter and experiencing the worst spell of weather we have had for some years, some of the outdoor activities are currently curtailed.

In the last edition the work of the Wednesday painting crew was mentioned. In spite of the weather they have persevered and have made good progress. One set back has been that the survey office windows which have seen the old putty removed and new applied along with the necessary coats of paint have attracted the attention of the local magpies. They have removed the putty from the base of all the panes. Presumably they have an addiction to linseed oil!

Work continues in the mill with the rag frames now receiving much needed attention. Rag frames were used at stream works' but none have survived and the set we have at King Edward were made by the late Willie Uren to the traditional design and are regularly demonstrated to the public during the season.

Work has started on the roof of the weighbridge stores and its concrete block extension. New trusses are in place on the extension but the inclement weather has halted progress currently.

Preparations for the International Student Mining Games are under way and the bases for some large concrete blocks for use in the drilling competition have been installed in the Home Field in the shadow of the stamps engine house. The blocks themselves are being cast by a local company and will arrive on site early in the New Year. Up to forty teams from as far afield as Australia and Brazil are expected to compete in late March 2012. At KEM we are providing the venue and back up advice but the actual organisation and financial arrangements have to be accomplished by the students' own management committee.

K.J.T.R.

PUFFING DEVIL NEWSLETTER



The East Cornwall branch have published the second edition of the Trevithick Society's junior newsletter- *The Puffing Devil*. This colourful newsletter is for our younger members and is a development on the successful series of educational packs and booklets produced by the Society for schools in the East Cornwall area. This latest edition of the newsletter includes articles on interpreting industrial landscapes, Cornish engine houses and terminology explained. If you have a junior member in your family that would like to receive copies of this newsletter then contact John or Cheryl Manley at teammanley@hotmail.com.

John Manley



JOSEPH RAWLINGS - A CORNISHMAN IN MICHIGAN

Joseph Rawlings was born in Camborne on February 6th 1826 and like thousands of other Cornishmen he emigrated to America. What distinguished him from many others was that he was still working at the age of 70 and he wrote his *Recollections of a Long Life* in 1914 at the age of 88. His *Reminiscences* were rewritten by his son Samuel omitting some of the more contentious parts of his recollections.

His *Recollections of a Long Life* have recently been edited by Roy Drier and published in copper County Tales 1. He is also the landlord for the schoolmaster whose diary has been edited and published by Philip Mason as *A Copper Country Journal*.

My interest in Rawlings was sparked when I helped to organise and

run a summer school in the Keweenaw an area of the Michigan Upper Peninsula (UP) where he spent a large part of his working life.

Rawlings was brought up by his maternal grandmother and he left school at age 14 when his mother's cousin, Captain Joseph Vivian of Reskadinnick, found a place for him in the machine shop at North Roskear mine. It was here that Rawlings gained his experience in mining machinery including high pressure steam engines and stamps. He probably also learned about the man engine because the *Mechanics Magazine* in 1844 published an article on the visit of another of his uncles, Captain Nicholas Vivian to the Tresavean mine man engine.

He then worked for his cousin Nicholas Vivian, at a small engine repair shop and went with him to the Copper House Foundry where they worked together on building a steam engine destined for the Bruce Mines which were being developed



Photo 1. Eagle Harbour. 3 pylons of the pier remained in 2011

in Ontario, Canada on the North shore of Lake Huron. Rawlings went to Bristol in 1847, presumably in connection with shipping the engine to Canada, but he was then hired by the Locomotive Works which was closed by a strike in 1848.

Meanwhile mine closures and the potato blight severely reduced prospects in Cornwall. In addition, mining areas in Australia and South America were paying for young men and families to emigrate. Rawlings decided to emigrate to Australia with another man, but this was cancelled when the other man became ill. Instead, he decided to go to America. He had an uncle who had previously emigrated to Canada, and a brother who had been sent to live with their uncle. Financed by an inheritance from his parents (who had died when he was young), he left for Boston on the barque MaryAnn. The trip to America cost about \$10, and passengers had to provide their own food for the voyage, enough to last about 4 weeks. However, the ship provided drinking water.

The trip was almost over, and in sight of Newfoundland, when the ship was blown back across the Atlantic to the Azores and ultimately capsized. The passengers were picked up from lifeboats by the empty collier brig "Brothers of Scarborough" and delivered to Quebec, more than 7 weeks after leaving Cornwall. Rawlings was now a typical immigrant in 1849 for the mining areas: a single 23-year-old with little money, and no close family.

Finding no work in Quebec, he remembered the Bruce Mines and he went to Montreal, as a step to getting to Bruce to seek work. He expected to meet with his cousin, Nicholas Vivian, with whom he had built the engine for the crushing mill, and who was installing it there. By chance, he met some other men from Cornwall, and together they found the Bruce Mines office, where they were hired and given tickets for the journey to the Bruce, which included a boat to Toronto, and then overland travel followed by a final boat trip. However, when he reached the Mines, he found out that his cousin had disagreed with the

Mine agent, and left for the Cliff mine in Michigan. However, because Rawlings had worked on the engine's design and construction, he was hired to help with the assembly and other engineering projects. He worked on these projects for half a year, during which he survived a cholera epidemic, and then was out of work again in the spring, so went on a trip with a friend, and ended up in Toronto. He intended to visit his brother, but found via telegraph that his brother had left for England so he decided to follow his cousin to Michigan.

He took a boat to Sault Ste Marie, and waited there for the Independence, the first steamship that worked Lake Superior. In June 1850 he arrived at Eagle River in the Keweenaw district on the North shore of the UP.

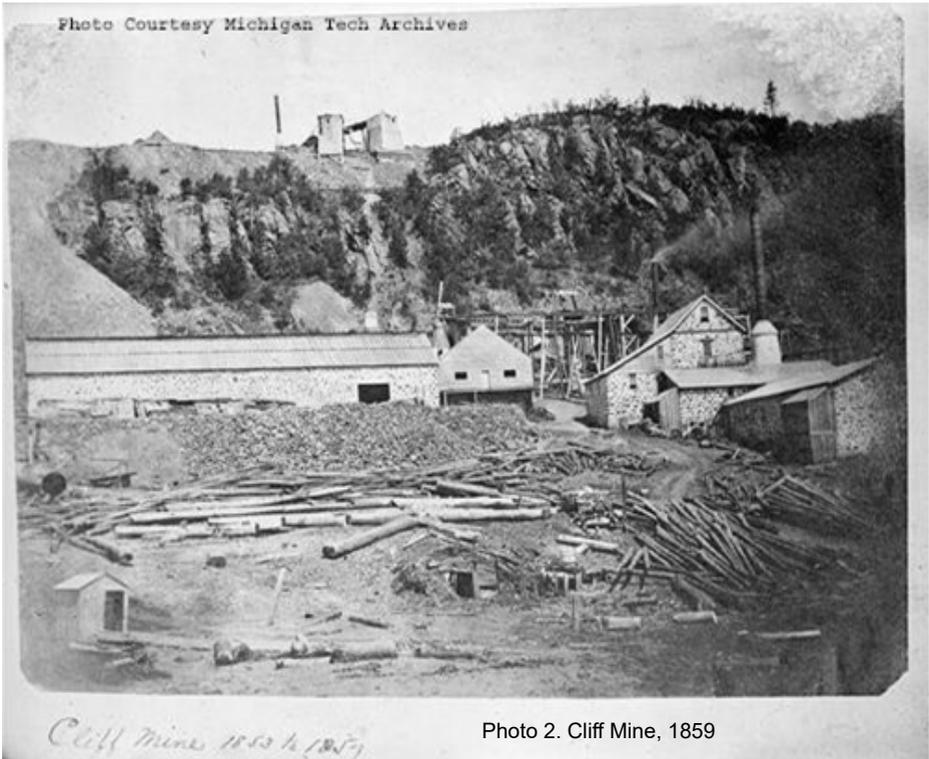
From here he walked along the one road from Eagle River to the Cliff Mine, about 4 miles away and met his cousin Nicholas Vivian again (see Photo 2.).

Once he had demonstrated his skill at machining and casting he was given a job by the mine agent, Captain Jennings, assisting his cousin.

When Vivian left for the winter, Rawlings agreed to "keep school" and did so for the winter, then went to Eagle Harbor to seek work in the area.

He went to the North West Mine (now the Delaware Mine) to erect a hoisting engine, then a small engine and stamps. The Minesota mine came next, in 1853, followed by the Toltec mine, then back to the Eagle Harbor (overland, by foot, in winter) and eventually back to Cliff mine in 1855.

At Cliff Mine he was hired as mechanical engineer by the new Agent, John Slawson. He boarded with Johanna Penberthy, a widow with 5 children. She was 14 years older than him, and had emigrated with her husband, John Penberthy, who had died in Montreal in 1853. Johanna continued the journey and arrived at Cliff mine in 1854. Her oldest son became an engineer at the mine, while her second son did some engine driving and also attended school. She took in boarders to survive. (There is an indication that she



knew of the Cliff mine because her sister was already there, running a boarding house.)

Rawlings and Joanna were married in 1856, and had two more children. Rawlings worked as an engineer for the mine for 5 years. In about 1860, just after his son was born, he was offered more money by Hodge and Christie of Detroit, an engine manufacturing company, to erect an engine and stamp mill at the Carp Lake mine. Rawlings took his stepson (Billy, age 11) with him, but the rest of the family remained in Clifton. The two of them then went to the Bohemian mine for 6 months and then Rawlings went back to the Cliff mine leaving Billy at the Bohemian mine to "finish his education" in 1861. He arrived back at Clifton just before Henry Hobart showed up to begin his duties as schoolteacher: Hobart boarded with the Rawlings family.

Rawlings was offered his old

position, which he accepted. He reportedly appreciated the weekly meetings held by Watson, the Agent of the mine, and he instituted some procedures to track work hours and materials, to reduce theft from the mine. He reports that nobody else except Watson liked this arrangement. He refers to Watson as his old friend. Nonetheless, in his reminiscences he does not refer to Watson by name, and had two serious disagreements with him. The first disagreement involved Rawlings' smoking: in this case, he left for a week and was then given back his old job, with a smoking office. In the second case, a man on his crew was fired by Watson, and Rawlings said he would leave too, as the man had been following his orders, instituted for safety. Both men were reinstated.

Rawlings not only worked on general maintenance of the mine engines, but also designed and built some of his own. He installed a man-engine which

was his version of the device that he remembered from Tresavean mine, and it was put into service in January 1865. It was treated with great secrecy the engine being in a building to which entry was carefully controlled. In 1866 a travel correspondent of the New York Times reported on a visit to the Keweenaw district and he gave extensive coverage to a visit to Cliff Mine. He had heard that there had once been a 300 ton mass of native copper taken out of the mine and, at the time of his visit, they were working on a 30 or 40 ton mass. His report gave a graphic description of his descent on the man-engine and view of the large mass being worked.

He wrote:

"We ascended the huge greenstone cliff to its top, a most leg-tiring operation, there being no way of ascending save by a steep sort of stairway, which is more fatiguing even than ladders, since the hands cannot help your progress and here I looked out upon the mining town and the scene spread out in rugged beauty for many miles about. As for the little town, it looks from that elevation just like the little toy villages we used to erect in childhood — all the houses exactly alike, each with its windows and its chimney, except those which represented churches, and they had a peaked block at one end for a steeple. On the summit the cliff was thickly wooded with cedars, &c, and covered with a wild and luxuriant growth of raspberry and other bushes.

In the afternoon under the guidance of Capt. Bennetts, a good humoured and most intelligent Cornishman, speaking the Cornish dialect in its broadest breadth, I descended into the mine. After undergoing a metamorphosis like that already described in my account of the descent into the Quincy mine, I got upon the first platform of the man-engine and began to sink down into the shaft with my candle flaring upon my forehead. I cannot describe the man-engine, and I shall not try, it consists of two perpendicular beams, hundreds of feet long firmly spliced and

ironed and having platforms at regular intervals just large enough for one man to stand on. The beams pump steadily up and down, and the passenger ascends or descends by stepping from platform to platform at the proper moment as they come opposite each other. To a very nervous person the dangers of such a descent are appalling; a mis-step at the critical moment, which is again and again recurring will send him, spinning, down to inevitable death.

As I went down and down on the ever sinking platforms, the vast length of this perpendicular shaft was lighted up by the candles of ascending miners, homeward bound; not brilliantly lighted, but dimly, yet sufficiently to enable me to realise what I could not otherwise have done the real depth of "hole" - nine hundred feet straight down, in this case. It was dreadfully wet and dirty, and the platforms were muddy and slippery. Arriving at the end of the downward journey, we wandered off. The differences exhibited between this and the Quincy mine were very striking. The mine being wholly free from smoke, and the air clear, I could see my surroundings quite distinctly. The tunnel through which we walked was very low and narrow, nowhere rising into a spacious hall, and it was roofed throughout by stull timbers, without which the rock would cave in. They have great trouble to keep the ground open, for such is the pressure overhead that the timbers are constantly breaking, when they have to be supported by new ones. The result is a constant system of watchfulness and a steady course of trimming and propping in every way that ingenuity and skill can devise. The timber used in the mines is felled to the woods upon the cliff, drawn in by oxen, and lowered down the shafts; men are kept constantly employed at this labour.

The man-engine at present reaches only down to the hundred-fathom level, but it is to be extended further down. It is a great blessing to the miners' legs Capt. Stevens told me that the miners consider the ladder-climbing by all odds the hardest part of the work they have to do, and a

man-engine is a thing to be thankful for. I was desirous of visiting the large mass spoken of before, and accordingly my guide led me down perpendicular ladders to the point where the mass was being cut. These perpendicular ladders test one's muscle stiffly, here and there a rung is gone, and your foot fails with a jerk that tugs hard at your arms after that the guide watches you carefully, and whenever a rung is gone he takes your heel in his hand and conveys it to its proper place.

Down a slightly slanting tunnel, through which we had to crawl on our hands and knees we groped our way, emerging presently upon a busy scene. Here lay the huge thirty-tonner and upon it men were at work with ringing tools. The process of cutting such masses into blocks that can be raised out of the mine is a very slow and tedious one. A miner holds a long chisel of the finest steel, upon which two other men strike with huge iron sledges and slowly chip by chip, the mass is cut in two. Of course, it takes months of steady labour to accomplish the work.

The lode (which as I have explained, runs across the range, and is composed of ore that is fully seventy percent pure copper) varies in size from great spreading masses like this to narrow lines no larger than a lead pencil, and sometimes disappears entirely. The adit is dug alongside this lode, following its course. When a mass spot is reached, it is necessary to excavate a large chamber behind it and in this chamber are placed kegs of powder by the hundred; as many as seven hundred having been employed in one instance, while a hundred and fifty kegs is not an uncommon load. The result of this immense blast is merely to dislodge the mass from its place, so great is its resistance. Being dislodged a platform is built around it, and the miners have a go at it, conscious of a "big job" on hand for some time to come. The cutting is done by contract.

Like miners generally my Cornish guide had a great pride in his rugged occupation and of his mining knowledge. Accidents seldom occur in the mines, he

told me; but occasionally one meets a poor fellow groping about in darkness, his eyes put out forever by a blast."

In 1865 Rawlings also began to work on altering some patented jiggling machines in the stamp mill, to increase the efficiency of the washing process for the retrieval of copper.

When Percival Updegraff was promoted to agent, from his position as clerk of the mine, Rawlings left, in 1868. Updegraff, who was born in 1833 in Ohio, had married a niece of Hussey (one of the owners of the mine) and had been instituted as a storekeeper at Cliff in 1861, and had parlayed his position into a fortune of \$25,000 by 1870. (Remember that pay rates were around \$1 a day at that time). He shot and killed one of Rawlings' pets before his promotion. Rawlings felt he could not work for Updegraff. The Cliff mine closed in 1869 the year after this change in leadership.

Rawlings was then invited to work for the Portage Lake Foundry, just East of the Quincy Smelter, on the Portage Lake, across from Houghton. Among other things, he designed the dredging screw for the canal being cut to link both sides of the Lake. During slow times in orders, he took on the repurposing of a stamp engine to a hoist engine at Schoolcraft mine (now Centennial), and the erection of the rolling mill in Houghton. His wife died in 1893 and when the foundry closed in 1896, he went to work again, he says for his "friend" Watson the Agent of the Cliff mine, in a mine in Marquette County, which failed within a few months, and Rawlings returned to Ripley.

Despite being 70 years old, Rawlings did not stop work. He lived with his son in Marquette county, and worked on patent drawings and other consulting work, including a system for continuous pouring of ingots of copper. When his son accepted a position at the replacement foundry in Ripley, he moved back there again, and came out of retirement when a fire at the foundry destroyed their old drawings. Once the drawings were replaced, he moved with his son between

Ontonogan county, Houghton and Ripley, picking up occasional work.

A Note on Michigan Upper Peninsula

Michigan Upper Peninsula (UP) is a geographic oddity. It is certainly a peninsula but it has no land frontier with the rest of Michigan - its land frontier is with Wisconsin with which it shares a boundary of about 130 miles. The UP is about one third of the state; approximately 330 miles long and 130 wide, which is about twice the size of South West England from Bristol to Penzance. It is bounded on the North by Lake Superior, on the East by St. Mary's River and on the South East by Lakes Michigan and Huron. Since 1957 the UP has been connected to the rest of Michigan at the Mackinac Straits by a road bridge which, when first built, was the longest suspension bridge in the world.

It is thinly populated with a density of only 18.2 per square mile. Since the mining industry closed down its economy is based on logging and tourism.

Keweenaw district, where Rawlings spent most of his working life, is a small peninsula on the North side of UP about 40 miles by 14 miles. Its population is about 2,400, which is less than a 200th that of Cornwall. Geologically, it has some of the oldest rock formations remaining on the Earth's surface, and is one of the few places where elemental or virgin copper has been found. It was at the centre of the UP mining industry, which in its heyday produced most of the world's copper. It was at the centre of the UP mining industry and the Michigan Mining School, now the Michigan Technological University was founded there in 1885.

J. Louise Wilson,
Grand Rapids,
Michigan

FLYING A KITE FOR TREVITHICK

A complete set of drawings for a model of a typical Trevithick engine were kindly donated by John Day's widow. A self-respecting engineer will quickly check out the detail, get an understanding of the nuts and bolts of it and immediately want to build it. Then having seen it work he will pass to the next project, mildly dissatisfied at the poor resemblance to the real thing. Low flywheel inertia allows mechanisms to move jerkily, the chuffing is barely audible and the steam too wispy. After some thought and daydreaming the plan is hatched to scale up. No guesses why John Day's workshop was named 'The Day Centre' and no wonder he was keen we should be involved. He knew this model at double the usual scale, one eighth, is modestly scaled up already and would be good for 'Best in Show'. As for further scaling up how many Societies have the proven in-house expertise to plan, build and operate a 'Puffing Devil'?

The drawings are somewhat quirky, being produced more to give effective training to future ROF designers than for easy model-making. Given the will and time however there would be no problem turning out a set of sensible working drawings for a model. Indeed the whole exercise researching and refining the detail would be a worthy task; we'd both simplify and elaborate for instance replacing circlips with cotter pins as link retainers for realism, improve general working efficiency, ensure effective combustion, adequate steam and so on.

There are plenty of experts and references out there, e.g. GKN Sankey builders of the Trevithick replica locomotive for Ironbridge Museums. What then? Find a lone modelmaker and let him take 10 years, as they do? Or a long term plan leading somewhere more definite, a mission with publicity, motivation, fund-raising, sponsorship perhaps. But being a Dorset-based member and a recent one at that I hesitate. Trevithick himself, the

great kite flyer, never hesitated for long, moreover Chairman did ask for ideas on next moves, so I boldly offer this kite to banish the Obscurity for ever - I favour setting sights on a major objective and devising a long term plan to achieve it. Let me explain.

Coincidentally, by yesterdays post came a plea from a Curator of Tyneside Industrial Museum decrying the 'frozen in aspic', urging hands-on and don't forget the educational aspect. Quite right. He's clearly not talking about Cornwall or many other notable exceptions we might mention – Mine Sites, Waterworks and Canal Pumphouses, Sheffield's water powered Forges, Ironbridge's replica working engines, all kept running by loyal volunteers year after year. Nor is it a problem with the Great Dorset Steam Fair just over the hill from my home – huge, successful and a good day out BUT something vital is missing there. A Curator of the Smithsonian told me he flies in regularly, specially visiting Dorset in preference to all others. Maybe he realises it presents an entirely unbalanced picture. Or maybe not. Visitors all come away thinking steam history started around 1850s or even later. True a model tent has a beam engine or two, but the more awful truth is that there is no mention of Trevithick anywhere. Traction engines in serried ranks work saw benches, threshers, circus and fairground paraphernalia, you name it, and they dominate completely.

Here's the plan and I deny any regional bias – the Trevithick Society might build on its already splendid activities in Cornwall, aiming in time to increase participation at Steam Fairs around UK

– in effect a funded Trevithick Road Show subject of course to limits on effort and costs. What is possible? Puffing Devil comes to Dorset? A stand? A balloon flying overhead with a catchy reminder just whose ingenuity it was that made all this possible? Nothing new in these ideas maybe, but consider this – what better time is there now that the obscurity of Trevithick has been highlighted, new celebrations for steam are up coming and the popular appeal is growing all the time.

What I propose is a carefully modulated incremental plan with the final objective very clear. From these revised drawings we raise funds for the making of a good model by a professional, display it as a centrepiece gaining know how, undertaking research, enabling in due course tapping lottery funding for scaling up to full scale; finally the procurement, building and testing thereof, giving vital operational experience; and thus we become proprietors of a working replica of a 1805 thresher and Trevithick engine combination, on a trailer ready for the next show. Taking its place alongside much later versions it would present a remarkably original spectacle to draw in the crowds. Existing in-house expertise straightens up the historic record and fills a knowledge gap - QED.

Roger Harris

Photos:

Front cover. The Coalbrookdale replica, Blists Hill, Ironbridge, Shropshire.

Below. The Great Dorset Steam Show



BOOK REVIEWS

Cornish Mines: St. Just to Redruth. Barry Gamble. 103 pages, glossy paperback. ISBN 13 978-0-906720-82-0. Alison Hodge. £5.95.



Cornish Mines: St. Just to Redruth and its companion, *Cornish Mines: Gwennap to the Tamar*, are part of the popular Pocket Cornwall series produced by Alison Hodge. They are very attractive, well produced, glossy booklets characterised by a very good selection of photographs (including evocative panoramic aerial views) and a brief but informative text. Together they offer a itinerary-filled tour of the geographic spread of surface mining remains across Cornwall.

Cornish Mines: St. Just to Redruth deals with the mining Districts around St Just, St. Ives, Godolphin, Wendron and Camborne-Redruth. Each mine, that is covered, can be located using the grid reference provided in conjunction with a short description of how to get there. Once there the photographs highlight some of the more obvious surface features, particularly engine houses, and the aerial views help to provide orientation in the context of the overall mining landscape. The accompanying text, befitting a pocket book, is concise and gives an historic overview of each mine, when it operated, what it brought to grass and salient observations about its working life. Overall the text provides a useful synopsis

for visitors to interpret and more fully appreciate what they see before them, and hopefully will entice some to find out more.

At the end of the book is an useful illustrated glossary which will assist the uninitiated with Cornish mining terminology.

My nagging criticism is probably not levelled at the author or publisher. It is the patently ludicrous situation that the World Heritage symbol is nowhere to be seen, and yet it should be emblazoned on every book, website or signage that deals with Cornish Mining.



It took Cornwall years to earn World Heritage status and now it seems to be Cornwall's best kept secret.

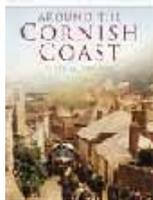
Cornish Mines: Gwennap to the Tamar. Barry Gamble. 110 pages, glossy paperback. ISBN 13 978-0-906720-81-3. Alison Hodge. £5.95.



This, the companion book, covers the Mining Districts: Gwennap, St. Agnes-Perranporth, St. Austell, Caradon Hill and the Tamar Valley. The format and treatment given to the mining remains is the same.

CNF.

Around the Cornish Coast. Peter Q. Treloar. 127 pages, glossy paperback. ISBN 978-0-7524-5784-0. The History Press. £12.99.



Pictorial books of old Cornwall, showing black and white postcards, abound in bookshops and the holiday resort gift shops that sell tat to the tourists. Invariably these books portray a Cornwall that has long since departed and are usually composed of very stylised, often posed, images, which of themselves impart remarkably little information about the place or time being depicted - a charge that can be often made of the accompanying text.

Around the Cornish Coast starts off according to type with the first few pages showing typically mundane scenes on its tour around the coast from Morwenstow to Torpoint, and then once Tintagel has been passed the book suddenly breaks the mould and comes alive. The photographs start to show people going about their everyday lives, whether they be fishermen catching, landing or processing fish, farmers gathering seaweed, locals massing for special events, or beach dwelling tourists. In addition there are many photographs depicting unusual events, which are explained in the accompanying text, as well as a smattering of shipwrecks and evocative panoramas.

Collectively this remarkable set of photographs opens a tantalising window into an era when sail dominated inshore waters and the fishing villages were still reliant on fishing. In conjunction with the informative text, this book provides a valuable insight into what Cornwall was really like and amply demonstrates how dramatically the Cornish coastal towns and villages have changed in recent decades, whilst the dramatic coastal scenery itself has altered much more subtly.

CNF.

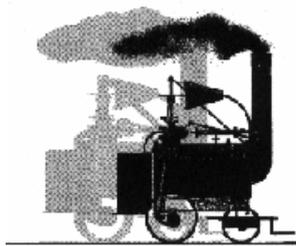
WEST CORNWALL PROGRAMME

This year it hasn't been easy to develop any 'themed months', although I'm still hoping for an Industrial Housing field trip in March to parallel Simon Thorpe's meeting. If the as-yet-undefined meeting in October turns out to be, as I hope, on the Slate Industry we could be looking at a field trip that month to look at the coastal slate quarries south of Tintagel and the Wolf-compound engine house at Prince of Wales Quarry. Don't hold your breath in any of these cases though ! Keep watch on the web-site.

I'm hoping that the meeting on 9 March will be a 'Seminar' meeting, with presentation and discussion with contributions from the body of the meeting.

We're continuing the broadening of the story beyond mining and into Cornwall's wider Industrial Heritage stories. We have miners overseas – part of the Great Cornish Migration story. We have some of the uses of copper – where the metal and art and employment stories all interface. We have our Chairman – twice – on US aspects of the story. And the story's maritime dimension enters in a small but vital part of the story of sail. And oh yes, we also have something of the language people used to talk about the story: not the native Celtic tongue but the understudied dialect. In fact, at present the only mining parts of the story are from France and the US – but there again, they needed what we had to offer, didn't they ?

Colin C. Short
Programme Secretary



SOCIETY MEETINGS

Society Programme 2012

Fri. 13th January. KEM.

Cornish Miners at the Silver-Lead Mines of Pontgibaud, France. By Mike Kiernan.

Tues. 31st January. ECB.

7.30pm Liskeard Public Hall. *Forder Mill and Tramway-Industrial Activity in the Forder Valley in Saltash.* An illustrated talk by John Parsons, Chairman of Saltash Heritage.

Fri. 10th February. KEM.

Big Apple Engineering. By Phil Hosken.

Tues. 21st February. ECB.

7.30pm Liskeard Public Hall. *Quarry Memories: an oral history of granite and limestone quarries in Cornwall and Devon.* An illustrated talk by Dr Kayleigh Mildren Project Officer of Peninsula Quarry Industry Social History Trust.

Fri. 9th March. KEM.

Industrial Heritage at risk. By Simon Thorpe.

Sun. 18th March. ECB.

Visit to West Mary Ann Mine at Menheniot. A rare chance to go underground. Meet at 1015 at the Liskeard Tavern car park.

Fri. 13th April. KEM.

Fitty scoven, or a brave flink. By Noel Michell. Cornish Dialect.

11th - 13th May.

The A.G.M. Weekend will be based at St. Just in Penwith with the A.G.M. and the Annual Dinner taking place at the Commercial Hotel, St. Just on Saturday, May 12th. Full details and booking forms will accompany the next newsletter.

Fri. 8th June. KEM.

Cornish Copperwork. By Jonathan Holmes

June. Date to be confirmed. ECB.

Field Survey training by Andy Robinson of Caradon Hill Area Heritage Project.

Fri. 13th July. KEM.

The work of Falmouth's quay punts during the Great Age of sail. By Roger Stephens.

Fri. 14th September. KEM.

Bingham Canyon Mine. By Phil Hosken.

Fri. 12th October. KEM.

[To be arranged]

Fri. 9th November. KEM.

Twentieth Century Mining in Devon, England. By Owen Baker.

The West Cornwall Branch meets at King Edward Mine (KEM) at 7.30pm on the 2nd Friday of the month.

The East Cornwall Branch (ECB) usually meets at the Public Rooms at Liskeard and commence at 7.30pm.

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The Trevithick Society, a registered charity, is a recognised body of the study of industrial archaeology in Cornwall. Membership is open to all who are interested in the region's great industrial past, whether or not they live in Cornwall. The Society takes its name from one of Britain's foremost inventors and pioneers of the Industrial Revolution, Richard Trevithick, a Cornishman whose name is inseparable from the development of steam power. This newsletter is published quarterly and, together with the annual journal, is distributed free to members. Letters and contributions are always welcome and should be sent direct to the editor.

The views expressed in this newsletter are those of the authors and not necessarily those of the Trevithick Society.

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